

REMARKS

Claims 55, 58 are amended, claims 74-76 are canceled, and no claims are added; as a result, claims 49-73, 77 and 79-83 are now pending in this application.

Reservation of the Right to Swear Behind References

Applicant maintains its right to swear behind any references which are cited in a rejection under 35 U.S.C. §§102(a), 102(e), 103/102(a), and 103/102(e). Statements distinguishing the claimed subject matter over the cited documents are not to be interpreted as admissions that the documents are prior art.

§103 Rejection of the Claims

Claims 49-77 & 79-83 were rejected under 35 USC § 103(a) as being unpatentable over Singh et al. in view of Havemann et al. (U.S. 5,488,015). Applicant respectfully traverses.

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d (BNA) 1596, 1598 (Fed. Cir. 1988). In combining prior art references to construct a *prima facie* case, the Examiner must show some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art that would lead an individual to combine the relevant teaching of the references. *Id.* The M.P.E.P. contains explicit direction to the Examiner that agrees with the *In re Fine* court:

To establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991)).

While it is not necessary that the cited references or prior art specifically suggest making the combination, there must be some teaching somewhere which provides the suggestion or motivation to combine prior art teachings and applies that combination to solve the same or similar problem which the claimed invention addresses. One of ordinary skill in the art will be presumed to know of any such teaching. (See, e.g., *In re Nilssen*, 851 F.2d 1401, 1403, 7

U.S.P.Q.2d (BNA) 1500, 1502 (Fed. Cir. 1988) and *In re Wood*, 599 F.2d 1032, 1037, 202 U.S.P.Q. (BNA) 171, 174 (C.C.P.A. 1979)). The requirement of a suggestion or motivation to combine references in a *prima facie* case of obviousness is emphasized in the Federal Circuit opinion, *In re Sang Su Lee*, 277 F.3d 1338; 61 U.S.P.Q.2D 1430 (Fed. Cir. 2002), which indicates that the motivation must be supported by evidence in the record.

The test for obviousness under § 103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 U.S.P.Q. (BNA) 543, 551 (Fed. Cir. 1985). Thus, the references must be considered in their entirety, including parts that teach away from the claims. See § MPEP 2141.02.

With respect to claims 49-53, applicant submits that a *prima facie* case of obviousness has not been made. Independent claim 49 recites, in part, “coating . . . at least one of the plurality of circuit elements with a mixture of oxide and carbon sources; and transforming the mixture of oxide and carbon sources into a silicon oxycarbide having uniformly distributed voids”. The Office Action does not specifically indicate where Singh or Havemann teach these features. Applicant can not find where Singh or Havemann, either alone or in combination, teaches these features. As Singh and Havemann do not teach all of the features of claim 49, applicant submits that claim 49 and claims 50-53 depending therefrom are allowable.

With respect to claim 54, applicant submits that a *prima facie* case of obviousness has not been made. Independent claim 54 recites, in part, “transforming the mixture of oxide and carbon sources into a first porous oxycarbide glass dielectric layer on the integrated circuit and insulating first and second of the plurality of circuit elements from each other,” and “transforming the mixture of oxide and carbon sources into a second porous oxycarbide glass dielectric layer on the integrated circuit”. Further, claim 54 includes two coating steps. The Office Action does not specifically indicate where Singh or Havemann teach these features. Applicant can not find where Singh or Havemann, either alone or in combination, teaches these features. As Singh and Havemann do not teach all of the features of claim 54, applicant submits that claim 54 and claim 57 depending therefrom are allowable.

Applicant further submits that Havemann teaches away from the present invention as defined by claim 54. Claim 54 recites, in part, “selectively forming vias in the first porous oxycarbide glass

dielectric layer for providing connection to the first and second circuit elements”. Havemann teaches a different formation process. Specifically, Figs. 3A-3D show forming the conductors 24 on insulator 22, then disposing a precursor solution between conductors 24 (col. 6, lines 20-27). Accordingly, Havemann teaches away from the present invention as defined by claim 54. Accordingly, claim 55 is non-obvious over Havemann, either alone or in combination with Singh. Reconsideration and allowance of claim 54 is requested.

With respect to claims 55-56, applicant submits that a *prima facie* case of obviousness has not been made. Independent claim 55 recites, in part, “providing a plurality of transistors on a substrate; . . . transforming the mixture of oxide and carbon sources into a first porous oxycarbide glass dielectric layer on the portion of the substrate surface and insulating first and second of the plurality of transistors from each other . . . ; selectively forming vias in the first porous oxycarbide glass dielectric layer for providing connection to the first and second transistors . . . ; patterning and etching the metal layers to provide desired interconnection between the first and second transistors and other circuit elements or interconnection lines”. Independent claim 55 further recites, in part, “thereafter coating at least a portion of a surface of a substrate with a second mixture of oxide and carbon sources; transforming the second mixture of oxide and carbon sources into a second porous oxycarbide glass dielectric layer on the substrate . . . ” The Office Action does not specifically indicate where Singh or Havemann teach these features. Applicant can not find where Singh or Havemann, either alone or in combination, teaches these features. As Singh and Havemann do not teach all of the features of claim 55, applicant submits that claim 55 and claim 56 depending therefrom are allowable.

Applicant further submits that Havemann teaches away from the present invention as defined by claim 55 for substantially similar reasons as stated above with regard to claim 54. Accordingly, claim 55 is non-obvious over Havemann, either alone or in combination with Singh. Reconsideration and allowance of claim 55 is requested.

With respect to claim 58, applicant submits that a *prima facie* case of obviousness has not been made. Independent claim 58 recites, in part, “selectively forming vias in the first porous oxycarbide glass dielectric layer for providing connection to the first and second circuit elements; forming metal layers in the vias and elsewhere on a working surface of the substrate; patterning and etching the metal layers to provide desired interconnection between the first and

second circuit elements and other circuit elements or interconnection lines; coating at least a second portion of a surface of a substrate with a mixture of oxide and carbon sources; transforming the mixture of oxide and carbon sources into a second porous oxycarbide glass dielectric layer on the second portion of the substrate surface.” The Office Action does not specifically indicate where Singh or Havemann teach these features. Applicant can not find where Singh or Havemann, either alone or in combination, teaches these features. As Singh and Havemann do not teach all of the features of claim 58, applicant submits that claim 58.

Applicant further submits that Havemann teaches away from the present invention as defined by claim 58 for substantially similar reasons as stated above with regard to claim 54. Accordingly, claim 58 is non-obvious over Havemann, either alone or in combination with Singh. Reconsideration and allowance of claim 58 is requested.

With respect to claims 59-63, applicant submits that a *prima facie* case of obviousness has not been made. Independent claim 59 recites, in part, “transforming the mixture of oxide and carbon sources into a silicon oxycarbide having uniformly distributed voids”. The Office Action does not specifically indicate where Singh or Havemann teach these features. Applicant can not find where Singh or Havemann, either alone or in combination, teaches these features. As Singh and Havemann do not teach all of the features of claim 59, applicant submits that claim 59 and claims 60-63 depending therefrom are allowable.

With respect to claims 64-68, applicant submits that a *prima facie* case of obviousness has not been made. Independent claim 64 recites, in part, “transforming the mixture of oxide and carbon sources into a silicon oxycarbide having uniformly distributed voids”. The Office Action does not specifically indicate where Singh or Havemann teach these features. Applicant can not find where Singh or Havemann, either alone or in combination, teaches these features. As Singh and Havemann do not teach all of the features of claim 64, applicant submits that claim 64 and claims 65-68 depending therefrom are allowable.

Applicant submits that claims 69-73 and 79-83 are allowable at least for substantially similar reasons as stated above with regard to claim 64.

With regard to claims 74-76, applicant cancels these claims. Accordingly, the rejection thereof is now moot.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612-349-9587) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

Respectfully submitted,

KIE Y. AHN ET AL.

By their Representatives,

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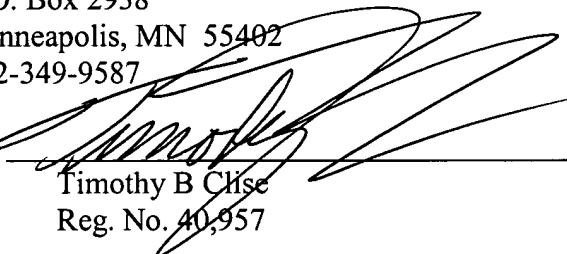
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Date

18 June '03

By


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